

QUERY CONTROL FORM		RTIS USE ONLY	
Application No. <u>09/144,626</u>	Prepared by <u>Lois Stone</u>	Tracking Number <u>5911608</u>	
Examiner-GAU <u>Porta - 2878</u>	Date <u>4/2/04</u>	Week Date <u>3/1/04</u>	
	No. of queries <u>1</u>	IFW	

JACKET			
a. Serial No.	f. Foreign Priority	k. Print Claim(s)	p. PTO-1449
b. Applicant(s)	g. Disclaimer	l. Print Fig.	q. PTOL-85b
c. Continuing Data	h. Microfiche Appendix	m. Searched Column	r. Abstract
d. PCT	i. Title	n. PTO-270/328	s. Sheets/Figs
e. Domestic Priority	j. Claims Allowed	o. PTO-892	t. Other

SPECIFICATION	MESSAGE
a. Page Missing	<p>Claim 17 (original claim 27) depends on claims 22, 25 and 26 (original claims 13, 16 and 24). Please advise.</p>
b. Text Continuity	
c. Holes through Data	
d. Other Missing Text	
e. Illegible Text	
f. Duplicate Text	
g. Brief Description	
h. Sequence Listing	
i. Appendix	
j. Amendments	
k. Other	
CLAIMS	
a. Claim(s) Missing	
<u>b. Improper Dependency</u>	
c. Duplicate Numbers	
d. Incorrect Numbering	
e. Index Disagrees	
f. Punctuation	
g. Amendments	
h. Bracketing	
i. Missing Text	
j. Duplicate Text	
k. Other	
	<p>RESPONSE <u>Claims have been renumbered. Please refer to the attached index of claims and the copy of the original and amended claims. Note the changes in claim dependency also. Thank you</u></p> <p style="text-align: right;">C.S.</p>
	<p style="text-align: right;">initials <u>CS</u></p>

Index of Claims



Application No.

09/744,626

Examiner

Christine Sung

Applicant(s)

YAU LI, SAM FONG

Art Unit

2878

√	Rejected
=	Allowed

-	(Through numeral) Cancelled
+	Restricted


N	Non-Elected
I	Interference

A	Appeal
O	Objected

Claim		Date									
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Issue Classification 	Application No. 09/744,626	Applicant(s) YAU LI, SAM FONG	
	Examiner Christine Sung	Art Unit 2878	

ISSUE CLASSIFICATION									
ORIGINAL				CROSS REFERENCE(S)					
CLASS		SUBCLASS		CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				
250		458.1		356	213				
INTERNATIONAL CLASSIFICATION									
G	0	1	T	1/10					
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Christine Sung 1/23/2004 (Assistant Examiner) (Date)								Total Claims Allowed: 40	
(Legal Instruments Examiner) (Date)								O.G. Print Claim(s) 1	

<input type="checkbox"/> Claims renumbered in the same order as presented by applicant				<input type="checkbox"/> CPA				<input type="checkbox"/> T.D.				<input type="checkbox"/> R.1.47			
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original		
1	1	38	31		61		91		121		151		181		
2	2	39	32		62		92		122		152		182		
3	3	40	33		63		93		123		153		183		
6	4	27	34		64		94		124		154		184		
7	5	28	35		65		95		125		155		185		
8	6	29	36		66		96		126		156		186		
9	7	30	37		67		97		127		157		187		
10	8	31	38		68		98		128		158		188		
17	9	4	39		69		99		129		159		189		
18	10	5	40		70		100		130		160		190		
19	11	32	41		71		101		131		161		191		
20	12		42		72		102		132		162		192		
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22	14		44		74		104		134		164		194		
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24	16		46		76		106		136		166		196		
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25	24		54		84		114		144		174		204		
26	25		55		85		115		145		175		205		
33	26		56		86		116		146		176		206		
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35	28		58		88		118		148		178		208		
36	29		59		89		119		149		179		209		
37	30		60		90		120		150		180		210		

Amended

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- e) at least one source radiation blocking panel, positioned between the source radiation focusing and collimating means and the sample, for blocking extraneous radiation of the beam of focused light and the emitted light, said panel having at least one pinhole wherethrough source radiation can pass, said pinhole provided in a position adjacent to the sample such that focused and collimated source radiation is directed onto the sample.

2. (amended) An optical detection system according to claim 1 wherein the sample platform comprises at least one microfabricated channel, or a microfabricated array electrophoresis chip, or at least one capillary column, or at least one flow cell.

9. (amended) An optical detection system according to claim 1 wherein a plurality of pinholes are disposed on the source radiation blocking panel at predetermined distances, said predetermined distance being the distance or a multiple of the distance between the samples arranged in an array.

14. (amended) An optical detection system according to claim 1 wherein the emitted radiation focusing means comprises a convergent cylindrical rectangular lens.

15. (amended) An optical detection system according to claim 14 wherein the source radiation blocking panel is provided with a plurality of pinholes.

Please cancel Claim 20.

Please amend Claims 21, 27 and 30 as follows:

21. (amended) An optical detection system according to claim 11 further comprising a second emitted radiation blocking panel with at least one pinhole disposed between the second emitted radiation focusing means and the second photodetector, said pinhole wherethrough collimated second higher wavelength radiation can pass.

27. (amended) An optical detection system according to claim 3, 17, 21, 24, 25 wherein said source radiation blocking panel is made of radiation absorbing material; and scanning means, connected to said source radiation blocking panel, are provided for shifting the source radiation blocking panel at predetermined distances and predetermined time intervals, said predetermined distance being the distance or a multiple of the distance between the different samples arranged in an array; and said predetermined time

interval being the time used to collect emitted radiation from each sample via said pinhole.

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30. (amended) An optical detection system according to claim 1, ~~9, 13, 16 or 24~~ wherein a plurality of pinholes are disposed on the source radiation blocking panel at predetermined distances, said predetermined distance being the distance or a multiple of the distance between the samples arranged in an array.

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Please add Claim 41, as follows:

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3241. (newly added) An optical detection system according to claim 1, wherein the pinhole is movable relative to the source radiation focusing and collimating means and the sample platform.

original

CLAIMS

- 1 1. An optical detection system comprising :
- 2 a) at least one electromagnetic radiation source directing source
- 3 radiation at a sample platform containing at least one sample;
- 4 b) at least one source radiation focusing and collimating means,
- 5 positioned between the radiation source and the sample for
- 6 focusing the directed source radiation onto the sample;
- 7 c) at least one photodetector adapted for receiving radiation
- 8 emitted from the sample;
- 9 d) at least one emitted radiation focusing means, positioned
- 10 between the photodetector and the sample, for focusing the
- 11 emitted light onto the photodetector; and
- 12 e) at least one source radiation blocking panel, positioned
- 13 between the excitation light focusing means and the sample, for
- 14 blocking extraneous radiation, said panel having at least one
- 15 pinhole wherethrough source radiation can pass, said pinhole
- 16 provided in a position adjacent to the sample such that
- 17 collimated source radiation is directed onto the sample.
- 1 2. An optical detection system according to claim 1 wherein the sample
- 2 platform comprises at least one microfabricated channel, a
- 3 microfabricated array electrophoresis chip, at least one capillary
- 4 column, or at least one flow cell.

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1 ~~7~~ 8. An optical detection system according to claim 1 wherein

2 a dichroic beamsplitter, disposed between the source radiation

3 ~~focusing and collimating means and the photodetector, is~~

4 provided for reflecting the source radiation onto the sample,

5 and refracting the emitted radiation onto the photodetector;

6 the photodetector, the emitted radiation focusing means, the

7 dichroic beamsplitter, the source radiation focusing and

8 collimating means and the sample are arranged in a manner

9 such that source radiation is focused onto said sample, and

10 focused emitted radiation is collected by said photodetector;

11 the source radiation, comprising an excitation radiation, is

12 directed at the dichroic beamsplitter; and

13 a long pass filter is disposed between the dichroic beamsplitter

14 and the emitted radiation focusing means for preventing source

15 radiation from reaching the photodetector, such that epi-

16 fluorescence detection is achieved.

1 ~~6.~~⁸ An optical detection system according to claim ~~5~~⁷ wherein the
2 photodetector, the emitted radiation focusing means, the dichroic
3 beamsplitter, the source radiation focusing and collimating means and
4 the sample are disposed along one plane in this stated order.

1 ~~7.~~⁹ An optical detection system according to claim ~~5~~⁷ further comprising an
2 interference filter provided between the dichroic beamsplitter and the
3 radiation source for isolating a pre-set excitation wavelength.

1 ~~8.~~¹⁰ An optical detection system according to claim ~~5~~⁷ further comprising a
2 rotatable filter wheel controlled by a rotor, said filter wheel, positioned
3 between the photodetector and the long pass filter, for the
4 transmission of emitted radiation of selected wavelengths from the
5 sample to the photodetector.

1 9. An optical detection system according to claim ~~5~~ wherein a plurality of
2 pinholes are disposed on the source radiation blocking panel at
3 predetermined distances, said predetermined distance being the
4 distance or a multiple of the distance between the samples arranged
5 in an array.

1 ~~10.~~¹⁸ An optical detection system according to claim 1 wherein
2 a plurality of directing means are provided to reflect, transmit and
3 refract the source radiation at the sample from opposing first and
4 second directions;
5 at least one pair of first and second pinholes provided on the source
6 radiation blocking panel such that source radiation from the first
7 direction can pass through the first pinhole into the sample, and

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8 emitted light is emitted through the first pinhole, and source radiation
 9 from the second direction can pass through the second pinhole into
 10 the sample, and emitted light is emitted through the second pinhole;
 11 and

12 the source radiation focusing and collimating means comprises a first
 13 and second convergent cylindrical rectangular lens disposed across
 14 the path of the source radiation from said first and second directions
 15 respectively for focusing the source radiation onto the first and second
 16 pinholes.

1 ~~11.~~ 18 An optical detection system according to claim ~~10~~ wherein the plurality
 2 19 of directing means comprises a set of mirrors which split the source

3 radiation into a first excitation wavelength in the first direction and a
 4 second excitation wavelength in the second direction.

1 ~~12.~~ 18 An optical detection system according to claim ~~10~~ wherein the plurality
 2 20 of directing means comprises a set of mirrors disposed at angles such
 3 that the first and second directions of radiation are both 45 degrees
 4 above the plane of the sample platform.

1 ~~13.~~ 18 An optical detection system according to claim ~~10~~ wherein
 2 21 the sample platform comprises an array of channels aligned in
 3 parallel;

4 the blocking panel comprises a plurality of pairs of pinholes aligned
 5 longitudinally in a parallel array, each pair of pinholes positioned
 6 directly above a channel of the sample platform; and

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8 a second photodetector provided for receiving said first
9 wavelength radiation reflected by said second dichroic
10 beamsplitter; and

11 a second emitted radiation focusing means disposed between the
 12 second photodetector and the second dichroic beamsplitter for
 13 focusing said first wavelength radiation onto said second
 14 photodetector.

1 ¹²~~18~~. An optical detection system according to claim ¹¹~~17~~ further comprising
 2 an interference filter disposed between the dichroic beamsplitter and
 3 the radiation source for isolating a pre-set excitation wavelength.

1 ¹³~~19~~. An optical detection system according to claim ¹¹~~17~~ further comprising a
 2 second interference filter disposed between the second dichroic
 3 beamsplitter and the second photodetector for isolating a pre-set
 4 excitation wavelength.

1 ~~20~~. An optical detection system according to claim 17 further comprising
 2 an emitted radiation blocking panel with at least one pinhole disposed
 3 between the emitted radiation focusing means and the photodetector,
 4 said pinhole ^Qwherethrough collimated emitted radiation can pass.

1 ~~21~~. An optical detection system according to claim 20 further comprising
 2 ^Q~~21~~ an second emitted radiation blocking panel with at least one pinhole
 3 disposed between the second emitted radiation focusing means and
 4 the second photodetector, said pinhole wherethrough collimated
 5 second higher wavelength radiation can pass.

1 ⁹~~22~~. An optical detection system according to claim ⁹~~17~~ further comprising a
 2 ¹⁵ amplifier connected to said photodetector, and a second amplifier
 3 connected to said second photodetector.

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1 ~~23~~ An optical detection system according to claim ~~22~~ ¹⁵ further comprising a
2 computer or data processor connected to said amplifier, and a second
3 computer or second data processor connected to said second
4 amplifier.

1 ~~24~~ An optical detection system according to claim 1 wherein said emitted
2 ²⁵ radiation focusing means comprises
3 a first and second convergent cylindrical rectangular lens; and
4 an emitted radiation blocking panel with at least one pinhole;
5 said first convergent cylindrical rectangular lens proximate said
6 sample platform for collecting radiation emitting from said sample
7 platform and focusing said emitted radiation onto said second
8 convergent cylindrical rectangular lens, said second convergent
9 cylindrical rectangular lens directing said focused light onto said
10 photodetector via said pinhole of said emitted radiation blocking
11 panel.

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1 ~~25~~ An optical detection system according to claim ~~24~~ ²⁵ wherein the emitted
2 radiation is transmitted radiation not absorbed by sample.

1 ~~26~~ An optical detection system according to claim 1, ~~5, 9, 13, 16 or 24~~ ^{7, 17, 21, 24, 25}
2 ³³ wherein the source radiation blocking panel is made of a radiation
3 absorbing material and further comprises a plurality of pinholes which
4 are disposed above each of said samples.

1 27. An optical detection system according to claim ~~5, 9, 13, 16 or 24~~ ^{an optical}
2 wherein said ~~source~~ radiation blocking panel is made of radiation

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3 absoorbing material; and scanning means, connected to said source
 4 radiation blocking panel, are provided for shifting the source radiation
 5 blocking panel at predetermined distances and predetermined time
 6 intervals, said predetermined distance being the distance or a multiple
 7 of the distance between the different samples arranged in an array;
 8 and said predetermined time interval being the time used to collect
 9 emitted radiation from each sample via said pinhole.

1 ~~28.~~ ³⁵ An optical detection system according to claim 1, ~~5, 9, 13, 16 or 24~~ ^{7, 17, 21, 24, 25}
 2 wherein the source radiation focusing and collimating means is a
 3 convergent cylindrical rectangular lens.

1 ~~29.~~ ³⁶ An optical detection system according to claim 1, ~~5, 9, 13 or 16~~ ^{7, 17, 21, 24}
 2 wherein the emitted radiation focusing means is a convergent
 3 cylindrical rectangular lens.

1 30. An optical detection system according to claim 1, ~~9, 13, 16 or 24~~
 2 wherein a plurality of pinholes are disposed on the excitation blocking
 3 panel at predetermined distances, said predetermined distance being
 4 the distance or a multiple of the distance between the samples
 5 arranged in an array.

1 ~~31.~~ ³⁸ An optical detection system according to claim 1, ~~5, 9, 13 or 16~~ ^{7, 17, 21, 24}
 2 wherein the source radiation is excitation light and the emitted
 3 radiation is fluorescence light.

1 ~~32.~~ ³⁹ An optical detection system according to any one of claims 1, ~~5, 9, 13,~~ ^{7, 17, 21}
 2 ~~16 or 24,~~ ^{24, 25} wherein the photodetector is connected to an amplifier.

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1, 7, 17, 21, 24, 25

1 33. An optical detection system according to any one of claims ~~4, 5, 9, 13,~~
 2 40 ~~16 or 24~~ wherein the photodetector is connected to a computer or a
 3 data processor.

1 34. An optical detection system according to claim 1 wherein the radiation
 2 27 source comprises a laser lamp, mercury lamp, xenon lamp or
 3 deuterium lamp.

1 35. An optical detection system according to claim 1 wherein the
 2 28 photodetector comprises at least one photodiode, a photodiode array,
 3 a photomultiplier tube or a charge couple device.

1 36. An optical detection system according to claim 1 wherein the pinholes
 2 29 are circular, and the diameter of the pinhole range between 1 to
 3 1,000 μ m.

1 37. An optical detection system according to claim 1 wherein the pinholes
 2 30 are rectangular in shape with the sides of the rectangle within 1 to
 3 1,000 μ m.

1 38. An optical detection system according to claim 1 wherein the emitted
 2 31 radiation focusing means is a convex lens.

1 39. An optical detection system according to claim 3 wherein the plurality
 2 4 of channels or columns are longitudinally aligned.

1 40. An optical detection system according to claim ~~39~~ 4 wherein the plurality
 2 5 of channels or columns are longitudinally aligned in parallel along
 3 one plane.

Add As

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